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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/764,335	STEINBERG ET AL.	
	Examiner	Art Unit	
	Amara Abdi	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _08 August 2008_.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-60_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-60_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _01/22/2004_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1. Applicant's response to the last Office Action, filed July 11, 2008 has entered and made of record.

2. In view of the Applicant amendments, the objection to Specification is expressly withdrawn.

3. In view of the Applicant amendments, the rejection of claims 15-16 and 45 under 35 U.S.C §112 is expressly withdrawn.

Response to Arguments

4. Applicant's arguments filed July 11, 2008 have been fully considered but they are not persuasive.

(a) Applicant argues (page 24, lines 1-11) that the Examiner remarked that separation of a face into sub-regions corresponds to normalizing a face region with respect to a standard size based on separation of eyes, nose, or mouth, or combination thereof....Applicant's use of "separation of" is as a noun and refers to a distance between things, such as the distance between the nose and mouth and either eye and the nose or mouth of a human face.

However, in response to Applicant's arguments the Examiner disagrees, because of the following reason: *First*; the "separating of" means "to divide into constituent parts" (Merriam- Webster) which clearly different from "distance between things"; *second*; the claim language (see element (d) of claim 1) recites: "wherein the ***normalized*** face regions comprise spatially ***normalized*** face regions, which are ***normalized*** with respect

to orientation or pose, or both". From the claim language, the separation of a face into sub-regions corresponds clearly to normalizing a face region based on separation of eyes, nose or mouth, or combination thereof.

Therefore, the rejection of claim 1 is proper and should be sustained.

(b) Applicant argues (pages 25-26) that the combination of Morimoto et al. and Tony J. does not yield Applicant's invention, nor would such combination produce an advantageous product that would work properly without having to take extraneous steps, such that one skilled in the art would not be motivated to combine Morimoto et al with Tony. J. Furthermore, the Applicant argues (page 26, lines 21-25) that Morimoto et al. describe a technique that is designed to be used in a non-analogous field....

In response to Applicants arguments, the Examiner disagrees.

As shown in figure 4, Morimoto et al. disclose one or more processor-readable media having stored thereon processor-readable code (column 3, line 20-22) including a database of face print data corresponding to detected face regions within images acquired (column 1, line 10-11) with an image acquisition device (13 in figure 1, column 3, line 4) and digitally-stored (21 in figure 2,column 3, line 24-25) wherein the face print image data are stored within the media for access by processor (column 3, line 23-25) comprises:

(a) an image data component (extracted means) including acquired digital image data including content data and unique identifiers corresponding to individual acquired digital images or face regions therein, or both; (column 1, line 47-49);

(b) an identity data component (storage means) including an identification listing of known identities to which identified face regions detected within the acquired digital image data have been determined to correspond; (column 1, line 45-47);

(c) a face recognition data component (collation means), comprising for an individual known identity (column 1, line 49-54):

(i) an appearance table (table of Fig. 3) including one or more identity entries for the known identity, (column 3, line 59-61), (the table of figure 3, comprises an appearance characteristics corresponding to the identities entries);

(ii) one or more identity tables corresponding to the one or more identity entries (given name) in the appearance table (column 3,line 59-60);

(iii) one or more face class tables corresponding to one or more face class entries of the one or more identity tables, where each face class table comprises one or more face print image entries corresponding to face prints (column 3, line 47-48; and column 3, line 56-59).

However, Morimoto et al. do not teach explicitly the normalizing of face regions, comprising spatially normalized face region, which are normalized with respect to size, orientation or pose, or luminance normalized face region, or combination thereof.

Tony J., in analogous environment, teaches a Face normalization and recognition, where the normalized face regions comprises spatially normalized face region, which are normalized with respect to the pose of an individual's face (Page 61, line 17-22).

All of the claim elements are known in references Morimoto et al. and Tony J. The only difference is the combination of Face normalization with the face print image data.

Thus, it would have been obvious to one having ordinary skill in the art to use the Face normalization and recognition as though by Tony J. with the face prints image data as shown in Morimoto et al, since the Face normalization and recognition could be used in combination with the face prints image data to achieve the predictable results of permitting of an automatic machine-based face detection and recognition in uncontrolled environments (Page 1, chapter 1, line 11-12).

Therefore, the combination of Morimoto et al. and Tony J. is proper.

In response to applicant's argument that the Morimoto et al. technique is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Morimoto et al. deals with specifying an identical person by collating a face as organic characteristics of the human being, and the Tony J. reference deals with the face normalization and recognition, which making the two references analogous to each other.

Therefore, the rejection of claims 1-4, 7-10, 12-13, 15-17, 22-23, 26-30, 33-40, 43, 45-51, and 58-60 and their dependent claims is proper and should be sustained.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-4, 7-10, 12-13, 15-17, 22-23, 26-30, 33-40, 43, 45-51, and 58-60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morimoto et al. (US 6,418,235) in view of Tony S. Jebara "3D Pose Estimation and Normalization for Face Recognition", Department of Electrical Engineering, McGill University, May 1996, chapter 4, P-P 61-68.

(1) Regarding claim 1:

As shown in figure 4, Morimoto et al. disclose one or more processor-readable media having stored thereon processor-readable code (column 3, line 20-22) including a database of face print data corresponding to detected face regions within images acquired (column 1, line 10-11) with an image acquisition device (13 in figure 1, column 3, line 4) and digitally-stored (21 in figure 2,column 3, line 24-25) wherein the face print image data are stored within the media for access by processor (column 3, line 23-25) comprises:

(a) an image data component (extracted means) including acquired digital image data including content data and unique identifiers corresponding to individual acquired digital images or face regions therein, or both; (column 1, line 47-49);

(b) an identity data component (storage means) including an identification listing of known identities to which identified face regions detected within the acquired digital image data have been determined to correspond; (column 1, line 45-47);

(c) a face recognition data component (collation means), comprising for an individual known identity (column 1, line 49-54):

(i) an appearance table (table of Fig. 3) including one or more identity entries for the known identity, (column 3, line 59-61), (the table of figure 3, comprises an appearance characteristics corresponding to the identities entries);

(ii) one or more identity tables corresponding to the one or more identity entries (given name) in the appearance table (column 3,line 59-60);

(iii) one or more face class tables corresponding to one or more face class entries of the one or more identity tables, where each face class table comprises one or more face print image entries corresponding to face prints (column 3, line 47-48; and column 3, line 56-59).

However, Morimoto et al. do not teach explicitly the normalizing of face regions, comprising spatially normalized face region, which are normalized with respect to size, orientation or pose, or luminance normalized face region, or combination thereof.

Tony J., in analogous environment, teaches a Face normalization and recognition, where the normalized face regions comprises spatially normalized face region, which are normalized with respect to the pose of an individual's face (Page 61, line 17-22).

It is desirable to develop a vision system which would permit automatic machine-based face detection and recognition in uncontrolled environments. The Tony's teaching, where normalizing face regions, is to achieve this goal. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to apply the Tony's teaching of face normalization and recognition, with the Morimoto et al. system, because such combination, would permit automatic machine-based face detection and recognition in uncontrolled environments (Page 1, chapter 1, line 11-12).

(2) Regarding claim 17:

As shown in figure 4, Morimoto et al. disclose one or more processor-readable media having stored thereon processor-readable code (column 3, line 20-22) including a database of face print data corresponding to detected face regions within images acquired (column 1, line 10-11) with an image acquisition device (13 in figure 1, column 3, line 4) and digitally-stored (21 in figure 2,column 3, line 24-25) wherein the face print image data are stored within the media for access by processor (column 3, line 23-25) comprises:

(a) an image data component (extracted mean) including acquired digital image, or a pointer to the location of said image (column 1, line 47-49), and additional data (attribute data) associated with said image (column 1, line 48), including content data (face data) (column 3, line 50-52), and unique identifiers (personal data) (column 3, line 44-46), (the personal data is read as unique identifier, such as a given name of person to be registered and registration item) corresponding to the acquired digital images or

face regions therein, or both, and wherein the image data component further comprises an image list of the acquired digital image data (attribute data) (column 4, line 13-17);

(b) an identity data component (storage means) including an identification listing of known identities to which identified face regions detected within the acquired digital image data have been determined to correspond (column 1, line 45-47);

(c) a face recognition data component (collation means), comprising for an individual known identity (column 1, line 49-54):

(i) one or more identity tables (table of figure 3) corresponding to one or more identity entries (column 3, line 3, line 48-50), (the table of figure 3 has the identity characteristics corresponding to the identity entries).

(ii) one or more face class tables (table of figure 3) corresponding to one or more face class entries of the one or more identity tables, wherein each face class table comprises one or more faceprint entries (Column 3, line 56-67), (the table of figure 3 has the face class table corresponding to face class entries of the identity table).

However, Morimoto et al. do not teach explicitly the normalizing of face regions, comprising spatially normalized face region, which are normalized with respect to size, orientation or pose, or luminance normalized face region, or combination thereof.

Tony J., in analogous environment, teaches a Face normalization and recognition, where the normalized face regions comprises spatially normalized face region, which are normalized with respect to the pose of an individual's face (Page 61,

line 17-22), size (average 3D face) (Fig. 4.7, Page 65, line 9-13), and luminance normalized face region (page 61, line 9-10).

It is desirable to develop a vision system which would permit automatic machine-based face detection and recognition in uncontrolled environments. The Tony's teaching, where normalizing face with respect to poses of an individual's face, is to achieve this goal. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to apply the Tony's teaching of normalizing face with respect to pose of an individual's face, with the Morimoto et al. system, because such combination, would permit automatic machine-based face detection and recognition in uncontrolled environments (Page 1, chapter 1, line 11-12).

(3) Regarding claim 34:

As shown in figure 4, Morimoto et al. disclose one or more processor-readable media having stored thereon processor-readable code (column 3, line 20-22) including a database of face print data corresponding to detected face regions within images acquired (column 1, line 10-11) with an image acquisition device (13 in figure 1, column 3, line 4) and digitally-stored (21 in figure 2,column 3, line 24-25) wherein the face print image data are stored within the media for access by processor (column 3, line 23-25) comprises:

(a) an image data component (extracted means) including acquired digital image data including content data and unique identifiers corresponding to individual acquired digital images or face regions therein, or both; (column 1, line 47-49);

(b) an identity data component (storage means) including an identification listing of known identities to which identified face regions detected within the acquired digital image data have been determined to correspond (column 1, line 45-47);

(c) a face recognition data component (collation means), comprising for an individual known identity (column 1, line 49-54):

(i) one or more identity tables (table of figure 3) corresponding to one or more identities, wherein each identity table comprises one or more face class entries each defined by values of one or more face classifier parameters (figure 3, column 3, line 44-46), (the table of figure 3 as the combination of identity table and face class entries)

(ii) one or more face class tables (table of figure 3) corresponding to the one or more face class entries of the one or more identity tables, wherein each face class table comprises one or more faceprint image entries corresponding to faceprints from the acquired digital image data. (Column 3, line 50-52), (the table of figure 3 comprises face class table which comprises face print image entries).

However Morimoto et al. do not teach explicitly the normalizing of face regions, comprising spatially normalized face region, which are normalized with respect to size, orientation or pose, or luminance normalized face region, or combination thereof.

Tony J., in analogous environment, teaches a Face normalization and recognition, where the normalized face regions comprises spatially normalized face

region, which are normalized with respect to the pose of an individual's face (Page 61, line 17-22), size (average 3D face) (Fig. 4.7, Page 65, line 9-13), and luminance normalized face region (page 61, line 9-10).

It is desirable to develop a vision system which would permit automatic machine-based face detection and recognition in uncontrolled environments. The Tony's teaching, where normalizing face with respect to poses of an individual's face, is to achieve this goal. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to apply the Tony's teaching of normalizing face with respect to pose of an individual's face, with the Morimoto et al. system, because such combination, would permit automatic machine-based face detection and recognition in uncontrolled environments (Page 1, chapter 1, line 11-12).

(4) Regarding claims 2 and 35:

Morimoto et al. further disclose one or more processor-readable media (column 3, line 20-22), where the image data component further comprises an image list of the acquired digital image data (attribute data) (column 4, line 13-17).

(5) Regarding claims 3 and 22:

Morimoto et al. further disclose one or more processor-readable media (column 3, line 20-22), where at least one group of image data comprises a face region list including one or more entries each corresponding to an identified face candidate region within an acquired digital image (column 3, line 28-30).

(6) Regarding claims 4 and 23:

Morimoto et al. further disclose one or more processor-readable media (column 3, line 20-22), where the face region list further including one or more links, corresponding to the one or more entries, to one or more known identities (personal identification) within the identification listing of the identity data component (column 4, line 49-53), (the known identity within the identification listing is read as a personal identification such address).

(7) Regarding claims 7, 26, and 36:

Morimoto et al. further disclose one or more processor-readable media (column 3, line 20-22), where the known identities correspond to handles identifying a known person (column 4, line 18-26), (the body type data, sexuality data, and age group data are read as a known identities stored in the storage, which are corresponding to the registered person or known person).

(8) Regarding claims 8, 27, and 37:

Morimoto et al. further disclose one or more processor-readable media (column 3, line 20-22), where the identity data component further comprises database links to face recognition data of the face recognition component (figure 3, column 3, line 50-55), (it is read that the identity data comprises links to face recognition data in table of figure 3).

(9) Regarding claims 9, 28, and 38:

Morimoto et al. further disclose one or more processor-readable media (column 3, line 20-22), where the identity data component further comprises one or more

database links to personal data (given name of the registered person) associated with one or more known identities (figure 3, column 3, line 48-50), (the known identity is read as the given name of the registered person and has a link to personal data in table of figure 3).

(10) Regarding claims 10, 29, and 39:

Morimoto et al. further disclose one or more processor-readable media (column 3, line 20-22), where the identity data component comprises a table of personal data associated with a known identity (see table of figure 3), (the personal data is read as an attribute data which is associated with known identity).

(11) Regarding claims 12 and 33:

Morimoto et al. further disclose one or more processor-readable media (column 3, line 20-22), where each identity table comprises one or more face class entries (face data) each defined by values of one or more face classifier parameters (see table of figure 3), (the face data is read as face class entries which is define by one or more of contour line, and an area).

(12) Regarding claims 13 and 43:

Morimoto et al. further disclose one or more processor-readable media (column 3, line 20-22), where at least two identity entries are characterized separately due to at least one distinguishing appearance characteristic (figure 4, step n3, column 4, line 15-16), (in step n4, it is read that the attribute data includes the body type data, which is interpreted as one of the distinguishing appearance that can make difference between two identities entries).

(13) Regarding claims 15 and 45:

Morimoto et al. further disclose one or more processor-readable media (column 3, line 20-22), where the appearance table comprises a list of links to one or more identity tables associated with distinct appearances (body type) determined for the known identity (figure 3, column 3, line 50-55), (the distinct appearance is read as the body type which is associated to the identity of the person to be registered).

(14) Regarding claims 16 and 46:

Morimoto et al. further disclose one or more processor-readable media (column 3, line 20-22), where the one or more identity tables further comprise one or more links corresponding to the one or more face class tables (figure 3, column 3, line 46-48), (it is read that the one or more identity data in the table such as given name or ID, has a link to the face data in the table such as eyes, and position of nose).

(15) Regarding claims 30 and 40:

Morimoto et al. further disclose one or more processor-readable media (column 3, line 20-22), where the personal data comprises full name, one or more address, one or more phone numbers, one or more email address, one or more web address, or combination thereof (table of figure 3, column 3, line 44-45 and line 48-50).

(16) Regarding claim 47:

Morimoto et al. further disclose one or more processor-readable media (column 3, line 20-22), where the one or more face class tables (table of figure 3) comprises one or more of the previously determined value range of the one or more face classifier

parameters (Figure 3, column 3, line 44-46), (the table of figure 3 comprises a face class table which includes a value range of face parameter).

(17) Regarding claim 48:

Morimoto et al. further disclose one or more processor-readable media (column 3, line 20-22), where each value range is uniquely associated with the identified and user confirmed face region detected within the acquired digital image (column 1, line 47-49), (the value range in the table of figure 3 is associated with the identified face region detected within the acquired digital image).

(18) Regarding claims 49, 50, and 51:

Morimoto et al. disclose one or more processor-readable media (column 3, line 20-22) as described in claims 1, 17, and 34 above.

However, Morimoto et al. do not explicitly mention the system, where the normalized face regions are normalized prior to extracting face classifier parameters therefrom.

Tony J., in analogous environment, teaches a Face normalization and recognition, where the normalized face regions are normalized prior to extracting face classifier parameters therefrom (Page 80, line 15-16), (Tony J. is clearly normalizing the face before the recognition and classification of the identity on the basis of the variance).

It is desirable to develop a vision system which would permit automatic machine-based face detection and recognition in uncontrolled environments. The Tony's teaching, where the normalized face regions are normalized prior to extracting face

classifier parameters, is to achieve this goal. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to apply the Tony's teaching of normalizing face regions prior to extracting face classifier parameters, with the Morimoto et al. system, because such combination, would permit automatic machine-based face detection and recognition in uncontrolled environments (Page 1, chapter 1, line 11-12).

(19) Regarding claims 58, 59, and 60:

Morimoto et al. disclose one or more processor-readable media (column 3, line 20-22) as described in claims 1, 17, and 34 above.

However, Morimoto et al. do not teach explicitly the system, where the normalized face regions are normalized with respect to pose, and then with respect to orientation, and then with respect to size.

Tony J., in analogous environment, teaches a Face normalization and recognition, where the normalized face regions are normalized with respect to pose (Page 61, line 17-19) and then with respect to orientation (Page 61, line 18-19), and then with respect to size (segmenting and histogram of face) (Page 61, line 20-23), (it is read the segmenting and histogram of face comprise the size of face)

It is desirable to develop a vision system which would permit automatic machine-based face detection and recognition in uncontrolled environments. The Tony's teaching, where the normalized face regions are normalized with respect to pose, than orientation than size, is to achieve this goal. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to apply the Tony's

teaching where normalizing with respect to pose, than orientation than size, with the Morimoto et al. system, because such combination, would permit automatic machine-based face detection and recognition in uncontrolled environments (Page 1, chapter 1, line 11-12).

7. Claims 5-6 and 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morimoto et al. (US 6,418,235) in view of Tony S. Jebara "3D Pose Estimation and Normalization for Face Recognition", Department of Electrical Engineering, McGill University, May 1996, chapter 4, P-P 61-68, and Watanabe (US-PGPUB 2003/0048926).

(1) Regarding claims 5 and 24:

As shown in figure 4, Morimoto et al. disclose one or more processor-readable media having stored thereon processor-readable code (column 3, line 20-22) including a database of face print data corresponding to detected face regions within images acquired (column 1, line 10-11) with an image acquisition device (13 in figure 1, column 3, line 4) and digitally-stored (21 in figure 2,column 3, line 24-25) wherein the face print image data are stored within the media for access by processor (column 3, line 23-25) comprises:

(a) an image data component (extracted means) including acquired digital image data including content data and unique identifiers corresponding to individual acquired digital images or face regions therein, or both; (column 1, line 47-49);

(b) an identity data component (storage means) including an identification listing of known identities to which identified face regions detected within the acquired digital image data have been determined to correspond; (column 1, line 45-47);

(c) a face recognition data component (collation means), comprising for an individual known identity (column 1, line 49-54):

(i) an appearance table (table of Fig. 3) including one or more identity entries for the known identity, (column 3, line 59-61), (the table of figure 3, comprises an appearance characteristics corresponding to the identities entries);

(ii) one or more identity tables corresponding to the one or more identity entries (given name) in the appearance table (column 3,line 59-60);

(iii) one or more face class tables corresponding to one or more face class entries of the one or more identity tables, where each face class table comprises one or more face print image entries corresponding to face prints (column 3, line 47-48; and column 3, line 56-59).

However, Morimoto et al. do not teach explicitly the following items:

1) the normalizing of face regions, comprising spatially normalized face region, which are normalized with respect to size, orientation or pose, or luminance normalized face region, or combination thereof.

2) the multiple tables of image classification events, occasions, locations, or place, or other categories to which groups of multiple images of image data are determined to belong.

(a) Obviousness in view of Tony J.

Tony J., in analogous environment, teaches a Face normalization and recognition, where the normalized face regions comprises spatially normalized face region, which are normalized with respect to the pose of an individual's face (Page 61, line 17-22), size (average 3D face) (Fig. 4.7, Page 65, line 9-13), and luminance normalized face region (page 61, line 9-10).

It is desirable to develop a vision system which would permit automatic machine-based face detection and recognition in uncontrolled environments. The Tony's teaching, where normalizing face with respect to poses of an individual's face, is to achieve this goal. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to apply the Tony's teaching of normalizing face with respect to pose of an individual's face, with the Morimoto et al. system, because such combination, would permit automatic machine-based face detection and recognition in uncontrolled environments (Page 1, chapter 1, line 11-12).

(b) Obviousness in view of Watanabe

Watanabe, in analogous environment, teaches a surveillance system, surveillance method and surveillance program, where using the multiple tables (tables of Fig. 9 and 10) of image classification events (tables of Fig. 9 and 10 are read as multiple tables), occasions, locations, or place (Fig. 9, paragraph [0088], line1-13, and paragraph [0089], line 1-3).

It is desirable to provide a surveillance system whereby specific persons can be detected readily from visiting persons, without placing a large burden on the

surveillance operator. The Watanabe's teaching where using multiple tables is to achieve this goal. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to apply the Watanabe's system, where using multiple tables, with the combination Morimoto et al. and Tony J., because such feature provides a surveillance system whereby specific persons can be detected readily from visiting persons, without placing a large burden on the surveillance operator ((see the Abstract, line 1-4).

(2) Regarding claims 6 and 25:

Morimoto et al. further disclose one or more processor-readable media (column 3, line 20-22), where the image data component further comprises a set of database (attribute data) links to the tables of image classification categories (column 4, line 64-65), (the set of database is read as the attribute data set to the image data).

8. Claims 11, 31-32, and 41-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morimoto et al. (US 6,418,235) in view of Tony S. Jebara "3D Pose Estimation and Normalization for Face Recognition", Department of Electrical Engineering, McGill University, May 1996, chapter 4, P-P 61-68, and Jonas (US-PGPUB 2004/0210763).

(1) Regarding claims 11, 31, and 41:

As shown in figure 4, Morimoto et al. disclose one or more processor-readable media having stored thereon processor-readable code (column 3, line 20-22) including a database of face print data corresponding to detected face regions within images

acquired (column 1, line 10-11) with an image acquisition device (13 in figure 1, column 3, line 4) and digitally-stored (21 in figure 2,column 3, line 24-25) wherein the face print image data are stored within the media for access by processor (column 3, line 23-25) comprises:

(a) an image data component (extracted means) including acquired digital image data including content data and unique identifiers corresponding to individual acquired digital images or face regions therein, or both; (column 1, line 47-49);

(b) an identity data component (storage means) including an identification listing of known identities to which identified face regions detected within the acquired digital image data have been determined to correspond; (column 1, line 45-47);

(c) a face recognition data component (collation means), comprising for an individual known identity (column 1, line 49-54):

(i) an appearance table (table of figure 3) including one or more identity entries for the known identity, (column 3, line 59-61), (the table of figure 3, comprises an appearance characteristics corresponding to the identities entries);

(ii) one or more identity tables corresponding to the one or more identity entries (given name) in the appearance table (column 3,line 59-60);

(iii) one or more face class tables corresponding to one or more face class entries of the one or more identity tables, where each face class table comprises one or more face print image entries corresponding to face prints (column 3, line 47-48; and column 3, line 56-59).

However, Morimoto et al. do not explicitly mention the following items:

1) the normalizing of face regions, comprising spatially normalized face region, which are normalized with respect to size, orientation or pose, or luminance normalized face region, or combination thereof.

2) wherein the system further comprises a set of links to a relationship list or a group membership list or both.

(a) Obviousness in view of Tony J.

Tony J., in analogous environment, teaches a Face normalization and recognition, where the normalized face regions comprises spatially normalized face region, which are normalized with respect to the pose of an individual's face (Page 61, line 17-22), size (average 3D face) (Fig. 4.7, Page 65, line 9-13), and luminance normalized face region (page 61, line 9-10).

It is desirable to develop a vision system which would permit automatic machine-based face detection and recognition in uncontrolled environments. The Tony's teaching, where normalizing face with respect to poses of an individual's face, is to achieve this goal. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to apply the Tony's teaching of normalizing face with respect to pose of an individual's face, with the Morimoto et al. system, because such combination, would permit automatic machine-based face detection and recognition in uncontrolled environments (Page 1, chapter 1, line 11-12).

(b) Obviousness in view of Jonas

Jonas, in analogous environment, teaches a confidential data sharing and

anonymous entry resolution, where the system comprises a set of links (identifier) to a relationship list (paragraph [0039], line 1-3), (it is read that the identifier is linked to the relationship)

It is desirable to provide a method for processing data in a database. The Jonas teaching, where the system comprises a set of links to a relationship is to achieve this goal. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to apply the Jonas teaching, where the system comprises a set of links to a relationship, with the combination Morimoto et al. and Tony J., because such feature provides the processing of data in a database (paragraph [0012], line 1-2).

(2) Regarding claims 32 and 42:

Morimoto et al. further disclose one or more processor-readable media (column 3, line 20-22), where the relationship list comprises data on relationships between the known identity and other identities named within the database, and wherein the group membership list comprises data on grouping of known identities based on family ties, hobbies, interests, group memberships, interpersonal relationships, or combinations thereof (Table of figure 3, column 3, line 52-55 and line 61-67).

9. Claims 52-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morimoto et al. and Tony J., as applied to claim 1 above, and further in view of Nicponski (US-PGPUB 2003/0128877).

(1) Regarding claims 52, 54, and 56:

The combination Morimoto et al. and Tony J. teaches the parental claim 1. Furthermore, Morimoto et al. discloses one or more processor-readable media (column 3, line 20-22) as described in claims 1, 17, and 34 above.

The combination Morimoto et al. and Tony S. do not teach explicitly the system, where the normalized face regions are normalized with respect to size.

Nicponski, in analogous environment, teaches a method and system for processing images for themed imaging services, where the normalized face regions are normalized (paragraph [0123], line 1-3) with respect to size (paragraph [0123], line 1).

It is desirable to process a digital image to assign useful meaning to human understandable objects and then utilize the results obtained in the further processing of the digital image. The Nicponski's teaching, where normalizing face regions with respect to the size, is to achieve this goal. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to apply the Nicponski's teaching, where normalizing face regions with respect to the size, with the combination Morimoto et al. and Tony J., because such feature processes a digital image to recognize and thereby assign useful meaning to human understandable objects, attributes or conditions and then to utilize the results obtained in the further processing of the digital image (paragraph [0183], line 4-7).

(2) Regarding claims 53, 55, and 57:

The combination Morimoto et al. and Tony J. teaches the parental claims 52, 54 and 56. Furthermore, Morimoto et al. disclose one or more processor-readable media (column 3, line 20-22) as described in claims 52, 54 and 56 above.

However, the combination Morimoto et al. and Tony J. Morimoto et al. do not explicitly mention the system, where the normalized face regions are normalized with respect to a standard size based on separation of eyes, nose or mouth, or combination thereof.

Nicponski, in analogous environment, teaches a method and system for processing images for themed imaging services, where the normalized face regions are normalized (paragraph [0123], line 1-3) with respect to standard size (paragraph [0123], line 1) based on separation of eyes, nose, or mouth (paragraph [0125], line 1-3), (the sub-region size which contains facial features is read as the same concept as the separation of eyes, nose, or mouth).

It is desirable to process a digital image to assign useful meaning to human understandable objects and then utilize the results obtained in the further processing of the digital image. The Nicponski's teaching, where normalizing face regions based on separation of eyes, nose, or mouth, is to achieve this goal. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to apply the Nicponski's teaching, where normalizing face regions based on separation of eyes, nose, or mouth, with the combination Morimoto et al. and Tony J., because such feature processes a digital image to recognize and thereby assign useful meaning to human

understandable objects, attributes or conditions and then to utilize the results obtained in the further processing of the digital image (paragraph [0183], line 4-7).

10. Claims 14 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morimoto et al. and Tony J., as applied to claim 1 above, and further in view of Lee et al. (7,092,555).

The combination Morimoto et al. and Tony J. teaches the parental claims 13 and 43 above.

However, the combination Morimoto et al. and Tony S. do not teaches explicitly the one or more processor-readable media, where the appearance characteristic is distinguished as determined from a sufficient difference in value of at least one face classifier parameter between faceprints and associated normalized face region determined to correspond to the same known identity, or based on user input, or both.

Lee et al., in analogous environment, teaches a system for registering and authenticating human face, where the appearance characteristic is distinguished (column 6, line 13-17) as determined from a sufficient difference in value of at least one face classifier parameter (column 4, line 62-63) between faceprints and associated normalized face region (column 4, line 57-61) determined to correspond to the same known identity (column 8, line 24-30).

It is desirable to perform reduced face authentication using the optimal set of readily distinguishable features at a training step. The Lee et al. teaching, where distinguishing the appearance characteristic is to achieve this goal. Therefore, it would have been

obvious to one having ordinary skill in the art at the time of the invention, to apply the Lee et al. teaching, where distinguishing the appearance characteristic, with the combination Morimoto et al. and Tony J., because such feature performs reduced face authentication using the optimal set of readily distinguishable features at a training step (column 9, line 22-28).

11. Claims 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morimoto et al. (US 6,418,235) in view of Tony S. Jebara "3D Pose Estimation and Normalization for Face Recognition", Department of Electrical Engineering, McGill University, May 1996, chapter 4, P-P 61-68, and DeLuca et al. (US-PGPUB 2004/0223063).

(1) Regarding claim 18:

As shown in figure 4, Morimoto et al. disclose one or more processor-readable media having stored thereon processor-readable code (column 3, line 20-22) including a database of face print data corresponding to detected face regions within images acquired (column 1, line 10-11) with an image acquisition device (13 in figure 1, column 3, line 4) and digitally-stored (21 in figure 2,column 3, line 24-25) wherein the face print image data are stored within the media for access by processor (column 3, line 23-25) comprises:

(a) an image data component (extracted means) including acquired digital image, or a pointer to the location of said image (column 1, line 47-49), and additional data (attribute data) associated with said image (column 1, line 48), including content data (face data) (column 3, line 50-52), and unique identifiers (personal data) (column 3, line

44-46), (the personal data is read as unique identifier, such as a given name of person to be registered and registration item) corresponding to the acquired digital images or face regions therein, or both, and wherein the image data component further comprises an image list of the acquired digital image data (attribute data) (column 4, line 13-17);

(b) an identity data component (storage means) including an identification listing of known identities to which identified face regions detected within the acquired digital image data have been determined to correspond (column 1, line 45-47);

(c) a face recognition data component (collation means), comprising for an individual known identity (column 1, line 49-54):

(i) one or more identity tables (table of figure 3) corresponding to one or more identity entries (column 3, line 3, line 48-50), (the table of figure 3 has the identity characteristics corresponding to the identity entries).

(ii) one or more face class tables (table of figure 3) corresponding to one or more face class entries of the one or more identity tables, wherein each face class table comprises one or more faceprint entries (Column 3, line 56-67), (the table of figure 3 has the face class table corresponding to face class entries of the identity table).

However, Morimoto et al. do not explicitly mention the following items:

1) normalizing of face regions, comprising spatially normalized face region, which are normalized with respect to size, orientation or pose, or luminance normalized face region, or combination thereof.

2) wherein the one or more groups of image data further include image metada including anthropometrical information.

(a) Obviousness in view of Tony J.

Tony J., in analogous environment, teaches a Face normalization and recognition, where the normalized face regions comprises spatially normalized face region, which are normalized with respect to the pose of an individual's face (Page 61, line 17-22), size (average 3D face) (Fig. 4.7, Page 65, line 9-13), and luminance normalized face region (page 61, line 9-10).

It is desirable to develop a vision system which would permit automatic machine-based face detection and recognition in uncontrolled environments. The Tony's teaching, where normalizing face with respect to poses of an individual's face, is to achieve this goal. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to apply the Tony's teaching of normalizing face with respect to pose of an individual's face, with the Morimoto et al. system, because such combination, would permit automatic machine-based face detection and recognition in uncontrolled environments (Page 1, chapter 1, line 11-12).

(b) Obviousness in view of DeLuca et al.

DeLuca et al., in analogous environment, teaches a detecting red eye filter and apparatus using meta-data, where the image data image data include image metada (paragraph [0148], line 14-17) including anthropometrical information (paragraph [0069], line 4-5).

It is desirable to provide a good indication as to whether an object is an eye, based on analysis of other detected human objects in the image. The DeLuca et al. teaching, where the image data includes a metadata including anthropometrical information is to achieve this goal. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to apply the DeLuca et al. teaching, where the image data includes a metadata including anthropometrical information, with the combination Morimoto et al. and Tony J., because such feature, can provide a good indication as to whether an object is an eye, based on analysis of other detected human objects in the image (paragraph [0017], line 4-6).

(2) Regarding claim 19:

As shown in figure 4, Morimoto et al. disclose one or more processor-readable media having stored thereon processor-readable code (column 3, line 20-22) including a database of face print data corresponding to detected face regions within images acquired (column 1, line 10-11) with an image acquisition device (13 in figure 1, column 3, line 4) and digitally-stored (21 in figure 2,column 3, line 24-25) wherein the face print image data are stored within the media for access by processor (column 3, line 23-25) comprises:

(a) an image data component (extracted mean) including acquired digital image, or a pointer to the location of said image (column 1, line 47-49), and additional data (attribute data) associated with said image (column 1, line 48), including content data (face data) (column 3, line 50-52), and unique identifiers (personal data) (column 3, line 44-46), (the personal data is read as unique identifier, such as a given name of person

to be registered and registration item) corresponding to the acquired digital images or face regions therein, or both, and wherein the image data component further comprises an image list of the acquired digital image data (attribute data) (column 4, line 13-17);

(b) an identity data component (storage means) including an identification listing of known identities to which identified face regions detected within the acquired digital image data have been determined to correspond (column 1, line 45-47);

(c) a face recognition data component (collation means), comprising for an individual known identity (column 1, line 49-54):

(i) one or more identity tables (table of figure 3) corresponding to one or more identity entries (column 3, line 3, line 48-50), (the table of figure 3 has the identity characteristics corresponding to the identity entries).

(ii) one or more face class tables (table of figure 3) corresponding to one or more face class entries of the one or more identity tables, wherein each face class table comprises one or more faceprint entries (Column 3, line 56-67), (the table of figure 3 has the face class table corresponding to face class entries of the identity table).

However, Morimoto et al. do not explicitly mention the following items:

1) normalizing of face regions, comprising spatially normalized face region, which are normalized with respect to size, orientation or pose, or luminance normalized face region, or combination thereof.

2) wherein the one or more groups of image data further include image metada

Including focusing distance of the lens at the time of acquisition, or effective digital camera sensor size, or both.

(a) Obviousness in view of Tony J.

Tony J., in analogous environment, teaches a Face normalization and recognition, where the normalized face regions comprises spatially normalized face region, which are normalized with respect to the pose of an individual's face (Page 61, line 17-22), size (average 3D face) (Fig. 4.7, Page 65, line 9-13), and luminance normalized face region (page 61, line 9-10).

It is desirable to develop a vision system which would permit automatic machine-based face detection and recognition in uncontrolled environments. The Tony's teaching, where normalizing face with respect to poses of an individual's face, is to achieve this goal. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to apply the Tony's teaching of normalizing face with respect to pose of an individual's face, with the Morimoto et al. system, because such combination, would permit automatic machine-based face detection and recognition in uncontrolled environments (Page 1, chapter 1, line 11-12).

(b) Obviousness in view *of DeLuca et al.,*

DeLuca et al., in analogous environment, teaches a detecting red eye filter and apparatus using meta-data, where the image data image data include image metada (paragraph [0148], line 14-17) including focusing distance of the lens at the time of acquisition (paragraph [0030], line 1-3).

It is desirable to have the digital capture device that contains more data than traditional film based image. The DeLuca et al. teaching, where the image data image data include image metada is to achieve this goal. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to apply the DeLuca et al. teaching, where the image data includes a metadata including focusing distance of the lens at the time of acquisition, with the combination Morimoto et al. and Tony J., because in such feature the digital capture device has an advantage that the image contains more data than traditional film based image has (paragraph [0010], line 1-3).

12. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Morimoto et al. (US 6,418,235) in view of Tony S. Jebara "3D Pose Estimation and Normalization for Face Recognition", Department of Electrical Engineering, McGill University, May 1996, chapter 4, P-P 61-68, and Enomoto (US-PGPUB 2003/0086134).

As shown in figure 4, Morimoto et al. disclose one or more processor-readable media having stored thereon processor-readable code (column 3, line 20-22) including a database of face print data corresponding to detected face regions within images acquired (column 1, line 10-11) with an image acquisition device (13 in figure 1, column 3, line 4) and digitally-stored (21 in figure 2,column 3, line 24-25) wherein the face print image data are stored within the media for access by processor (column 3, line 23-25) comprises:

(a) an image data component (extracted means) including acquired digital image, or a pointer to the location of said image (column 1, line 47-49), and additional data (attribute data) associated with said image (column 1, line 48), including content data (face data) (column 3, line 50-52), and unique identifiers (personal data) (column 3, line 44-46), (the personal data is read as unique identifier, such as a given name of person to be registered and registration item) corresponding to the acquired digital images or face regions therein, or both, and wherein the image data component further comprises an image list of the acquired digital image data (attribute data) (column 4, line 13-17);

(b) an identity data component (storage means) including an identification listing of known identities to which identified face regions detected within the acquired digital image data have been determined to correspond (column 1, line 45-47);

(c) a face recognition data component (collation means), comprising for an individual known identity (column 1, line 49-54):

(i) one or more identity tables (table of figure 3) corresponding to one or more identity entries (column 3, line 3, line 48-50), (the table of figure 3 has the identity characteristics corresponding to the identity entries).

(ii) one or more face class tables (table of figure 3) corresponding to one or more face class entries of the one or more identity tables, wherein each face class table comprises one or more faceprint entries (Column 3, line 56-67), (the table of figure 3 has the face class table corresponding to face class entries of the identity table).

However, Morimoto et al. do not explicitly mention the following items:

1) normalizing of face regions, comprising spatially normalized face region, which are normalized with respect to size, orientation or pose, or luminance normalized face region, or combination thereof.

2) wherein the image data component further includes additional image data associated with circumstances of acquisition of a parent image and associated face region corresponding to a group of image data.

(a) Obviousness in view of Tony J.

Tony J., in analogous environment, teaches a Face normalization and recognition, where the normalized face regions comprises spatially normalized face region, which are normalized with respect to the pose of an individual's face (Page 61, line 17-22), size (average 3D face) (Fig. 4.7, Page 65, line 9-13), and luminance normalized face region (page 61, line 9-10).

It is desirable to develop a vision system which would permit automatic machine-based face detection and recognition in uncontrolled environments. The Tony's teaching, where normalizing face with respect to poses of an individual's face, is to achieve this goal. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to apply the Tony's teaching of normalizing face with respect to pose of an individual's face, with the Morimoto et al. system, because such combination, would permit automatic machine-based face detection and recognition in uncontrolled environments (Page 1, chapter 1, line 11-12).

(b) Obviousness in view of Enomoto

Enomoto, in analogous environment, teaches an apparatus and method for image processing, where the image data component further includes additional image data associated with circumstances of acquisition of a parent image (paragraph [0092], line 14-16) and associated face region corresponding to a group of image data (paragraph [0092], line 16-19).

It is desirable to effectively executing red-eye color correction processing, freckle and wrinkle removing processing, trimming processing and the like for executing image processing based on image data. The Enomoto's teaching where the additional image data are associated with circumstances of acquisition of a parent image is to achieve this goal. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to apply the Enomoto's teaching, where the additional image data are associated with circumstances of acquisition of a parent image, with the combination Morimoto et al. and Tony J., because such feature, effectively executing red-eye color correction processing, freckle and wrinkle removing processing, trimming processing and the like for executing image processing based on image data (paragraph [0008], line 1-8).

13. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Morimoto et al.,Tony J., and Enomoto, as applied to claim 20 above, and further in view of Okusa (US-PGPUB 2003/0158838).

The combination Morimoto et al., Tony J., and Enomoto teaches the parental

claim 20. Furthermore, Enomoto discloses an image processing including red eye correction (Enomoto: paragraph [0008], line 4-5).

However, the combination Morimoto et al., Tony J., and Enomoto do not explicitly mention that the circumstances comprising location of image acquisition, date and time of image acquisition, type of image acquisition device.

Okusa, in analogous environment, teaches an image processing apparatus, comprising location of image acquisition (paragraph [0050], line 33-34), date (paragraph [0050], line 30-31) and time (paragraph [0050], line 17) of image acquisition, type of image acquisition device (paragraph [0050], line 4-5).

It is desirable to eliminate the labor required to enter a keyword for retrieving image data, and that can reduce the time needed to prepare retrieval data. The Okusa's teaching, where comprising location of image acquisition, date and time of image acquisition, type of image acquisition device is to achieve this goal. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to apply the Okusa's teaching, where comprising location of image acquisition, date and time of image acquisition, type of image acquisition device, with the combination Morimoto et al., Tony J., and Enomoto, because such feature eliminates the labor required to enter a keyword for retrieving image data, and that can reduce the time needed to prepare retrieval data (paragraph [0014], line 3-5).

Conclusion

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information:

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to AMARA ABDI whose telephone number is (571)270-1670. The examiner can normally be reached on Monday through Friday 8:00 Am to 4:00 PM E.T..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wu Jingge can be reached on (571) 272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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